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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/802,984	03/17/2004	Donald R. Van Der Moere	D5270	3898
30409	7590	01/04/2006	EXAMINER	
INTERNATIONAL ENGINE INTELLECTUAL PROPERTY COMPANY			GARCIA, ERNESTO	
4201 WINFIELD ROAD			ART UNIT	
P.O. BOX 1488			PAPER NUMBER	
WARRENVILLE, IL 60555			3679	

DATE MAILED: 01/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/802,984	Applicant(s) VAN DER MOERE ET AL.	
	Examiner Ernesto Garcia	Art Unit 3679	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 October 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 October 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Drawings

The drawings were received on 10/05/05. These drawings are acceptable.

Claim Objections

Claims 8 and 15 are objected to because of the following informalities:
regarding claim 8, the comma in line 1 should be --and a--; and,
regarding claim 15, --inside-- should be inserted before "surface" in line 7 to provide proper antecedent to "inside margin" in line 10, --material-- should be inserted after "certain" in line 8, the second occurrence of "the" in line 8 should be --a-- as a connecting rod has not been previously recited, and "piston pin" in line 10 should be --tubular body--. Appropriate correction is required. For purposes of examining the instant invention, the examiner has assumed these corrections have been made.

Claim Rejections - 35 USC § 112

Claims 1-7, 9-14, and 16-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1, it is unclear whether the combination or subcombination is being claimed. In particular, the preamble implies only the piston pin subcombination while lines 4-5 positively recite a feature pertaining to the combination and lines 5-7 positively recite the relationship of the piston pin and the pin bore of the connecting rod. Accordingly, is the combination or subcombination being claimed? For purposes of examination, the examiner has considered the claim to be drawn to the subcombination of piston pin. Further, with respect to the limitation "a material that is common with a material forming the connecting rod" in lines 4-5, it is improper to make comparisons to unclaimed elements. In particular, it is not clear what material is being required for the piston pin and one would not know whether or not any particular piston pin infringed the claim until it was mated to a connecting rod.

Regarding claim 2, the recitation "the coating comprising the piston pin cylindrical exterior margin" in lines 2-3 constitutes a double inclusion of this subject matter since such was already set forth by claim 1, line 2.

Regarding claims 3-7, the claims depend from claim 1 and therefore are indefinite.

Regarding claim 9, the recitation "the coating comprising the pin cylindrical exterior margin" in lines 2-3 constitutes a double inclusion of this subject matter since such was already set forth by claim 8, lines 2-3.

Regarding claim 16, it appears that "margin of the pin", line 4, should be --margin of the pin bore--. Further, it is not clear why the term "prior" is used (see line 3). Is chromium-nitride still the coating after mating the exterior margin with the inside margin?

Regarding claims 10-14, the claims depend from claim 9 and therefore are indefinite.

Regarding claims 17-21, the claims depend from claim 16 and therefore are indefinite.

Claim Rejections - 35 USC § 102

Claims 1-4 and 7, as best understood, are rejected under 35 U.S.C. 102(b) as being anticipated by Komuro et al., 5,851,659.

Regarding claim 1, Komuro et al. disclose, in Figure 3, a "piston pin" comprising a tubular body **13** having a cylindrical exterior margin having a coating, thus a coated cylindrical exterior margin (col. 7, lines 47-50). Applicants should note that the exterior margin is shiftably able to mate with an inside margin of a pin bore of an appropriately sized connecting rod. Further, applicant should note that the language of the claims reads on the prior art structure.

Regarding claim 2, the coating is a chromium-nitride (Cr-N) coating. The coating comprises an exterior margin.

Regarding claim 3, applicants are reminded that it is the patentability of the product, not recited process steps, that is to be determined irrespective of whether only process steps are recited. Accordingly, how the Cr-N coating is deposited, e.g., by physical vapor deposition, is of little consequence when Komuro possesses such coating. Therefore, this limitation has been given limited patentable weight. See MPEP 2113.

Regarding claim 4, the chromium-nitride coating was deposited to a depth of between 1 and 10 microns (col. 2, line 40).

Regarding claim 6, the coating is buffed. Applicant should note that the roller fatigue test apparatus inherently buffs the material until the coating peels off.

Regarding claim 7, the coating is buffed. Applicants are reminded that it is the patentability of the product, not recited process steps, that is to be determined irrespective of whether process steps are recited. Accordingly, how the coating is buffed, e.g., in a centerless buffing operation, is of little consequence when Komuro possesses such buffed coating. Therefore, this limitation has been given limited patentable weight. See MPEP 2113.

Claims 8 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Lemelson, 4,974,498.

Regarding claim 8, Lemelson discloses, in Figure 2, a combination of a piston pin **15** and a connecting rod **18**. The piston pin **15** has a tubular body **52** (col. 2, line 14) having a cylindrical exterior margin coated, thus a coated cylindrical exterior margin. The connecting rod **18** is formed of a certain material and has a pin bore (the pin goes through the pin bore of the connecting rod 18). An inside margin of the pin bore has a surface formed of the certain material. The pin bore and the piston pin are mating. The mating is a shiftable surface-to-surface engagement.

Regarding claim 15, Lemelson discloses a method comprising:

forming a tubular body **52** (col. 2, line 14);
coating the cylindrical exterior margin with a selected material **51**;
forming an inside surface margin of a connecting rod pin bore of a certain material employed in forming a connecting rod **18**; and,
mating the exterior margin of the tubular body **52** with the inside surface margin of the pin bore in a shiftable a surface-to-surface engagement.

Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Hamada et al., 6,886,521.

Regarding claim 1, Hamada et al. disclose, in Figure 2B, a piston pin comprising a tubular body **30** having a coated cylindrical exterior margin. Applicants should note that the exterior margin possesses the capability of being shiftable able to mate with an inside margin of a pin bore of an appropriately sized connecting rod.

Claim Rejections - 35 USC § 103

Claim 5, as best understood, is rejected under 35 U.S.C. 102(b) as being anticipated by Komuro et al., 5,851,659.

Regarding claim 5, Komuro et al. disclose the chromium-nitride coating deposited to a depth of a range of 1-80 microns (co. 2, line 40). However, Komuro et al. does not

disclose "substantially 5 microns". Applicants should note, that in a design consideration, one skilled in the art will choose a depth of 5 microns thus reading on "substantially 5 microns". Therefore, as taught by Komuro et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to choose a depth of substantially 5 microns as part of a design consideration.

Claims 8-10, 15, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over McKone, 1,491,155, in view of Kochendorfer et al., 4,406,558.

Regarding claim 8, McKone discloses, in Figure 6, a combination of a piston pin **17** and a connecting rod **18**. The piston pin **17** has a tubular body having a cylindrical exterior margin. The connecting rod **18** is formed of a certain material and has a pin bore (the pin goes through the pin bore of the connecting rod 18). An inside margin of the pin bore has a surface formed of the certain material. The pin bore and the piston pin are mating. The mating is a shiftable surface-to-surface engagement. However, McKone fails to disclose the cylindrical exterior margin is not coated to form a coated cylindrical exterior margin. Kochendorfer et al. teach coating the exterior margin of a piston pin with a hard nitride of the metals in the third to six group of the periodic table to produce a sliding bearing layer (col. 2, lines 45-50). Applicants should note that Chromium (Cr) is in the sixth group of the periodic table and chromium-nitride falls within the description as a layer. Therefore, as taught by Kochendorfer et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made

to provide the piston pin of McKone with a coating of chromium-nitride to provide a sliding bearing layer.

Regarding claim 9, the coating is a chromium-nitride coating disposed on the tubular body.

Regarding claim 10, applicants are reminded that it is the patentability of the product, not recited process steps, that is to be determined irrespective of whether only process steps are recited. Accordingly, how the Cr-N coating is deposited, e.g., by physical vapor deposition, is of little consequence when McKone as modified by Kochendorfer et al. possesses such coating. Therefore, this limitation has been given limited patentable weight. See MPEP 2113.

Regarding claim 15, McKone discloses, in Figure 6, a method comprising:
forming a tubular body **17**;
forming an inside surface margin of a connecting rod pin bore of a certain material employed in forming a connecting rod **18**; and,
mating the exterior margin of the tubular body **17** with the inside surface margin of the pin bore in a shiftable a surface-to-surface engagement. However, McKone fails to coat the cylindrical exterior margin with a selected material.

Kochendorfer et al. teach coating the exterior margin of a piston pin with a hard nitride of the metals in the third to six group of the periodic table to produce a sliding bearing layer (col. 2, lines 45-50). Applicants should note that Chromium (Cr) is in the sixth group of the periodic table and chromium-nitride falls within the description as a layer. Therefore, as taught by Kochendorfer et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the piston pin of McKone with a coating of chromium-nitride to provide a sliding bearing layer.

Regarding claim 16, the selected material comprises the chromium-nitride.

Claims 10-12 and 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over McKone, 1,491,155, in view of Kochendorfer et al., 4,406,558, as applied to claims 8-10, 15, and 16, and further in view of Komuro et al., 5,851,659.

Regarding claims 10 and 17, McKone as modified by Kochendorfer et al., fail to deposit the chromium-nitride coating by physical vapor deposition. Komuro et al. teach depositing chromium-nitride coating through physical vapor deposition as an ion plating process to provide resistance to peeling, abrasion and baking (see Abstract). Therefore, as taught by Komuro et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to deposit the chromium-nitride coating by physical vapor deposition to provide resistance to peeling, abrasion, and baking.

Regarding claims 11 and 18, McKone as modified by Kochendorfer et al., fail to disclose to deposit the chromium-nitride coating to a depth of between 1 and 10 microns. Komuro et al. teach a chromium-nitride coating deposited to a depth of between 1 and 80 microns (col. 2, line 40) as part of a design consideration of a sliding surface. The range of 1 and 10 microns falls within this disclosed range. Therefore, as taught by Komuro et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to deposit the chromium-nitride coating to a depth of between 1 and 10 microns as determined through routine experimentation and optimization.

Regarding claims 12 and 19, McKone, as modified by Kochendorfer et al. and Komuro et al., disclose the chromium-nitride coating deposited to a depth of a range of 1-80 microns (co. 2, line 40). However, Komuro et al. does not disclose "substantially 5 microns". Applicants should note, that in a design consideration, one skilled in the art will choose a depth of 5 microns thus reading on "substantially 5 microns". Therefore, as taught by Komuro et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to choose a depth of substantially 5 microns as part of a design consideration.

Claims 13 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over McKone, 1,491,155, in view of Kochendorfer et al., 4,406,558, and Komuro et al., 5,851,659, as applied to claims 10-12 and 17-19, and further in view of Fukutome et al., 5,601,293.

Regarding claims 13 and 20, McKone, as modified above, fails to disclose buffing the chromium-nitride after deposition. Fukutome et al. suggest treating the surface roughness of a chromium-nitride coating to resist wear (col. 7, line 18-21) as evidenced by the results. Therefore, as taught by Fukutome et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to buff the chromium-nitride after deposition to treat the surface roughness to resist wear.

Claims 14 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over McKone, 1,491,155, in view of Kochendorfer et al., 4,406,558, Komuro et al., 5,851,659, and Fukutome et al., 5,601,293, as applied to claims 13 and 20 above, and further in view of Wakefield, 3,757,378.

Regarding claim 21, as modified above, Fukutome et al. fail to disclose the buffing operation used. Wakefield teaches a centerless buffing operation to polish components. Therefore, as taught by Wakefield, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a centerless buffing operation to buff the coating of chromium-nitride.

Response to Arguments

Applicant's arguments filed 10/05/2005 have been fully considered but they are not persuasive.

With respect to Komuro et al., applicants have argued that Komuro et al. are limited to a sliding member, principally a piston ring, and that Figure 3 is actually a pitching test apparatus as noted in column 7, lines 42-44 and is therefore not a piston pin. In response, applicants should note that Figures 1-3 are not just limited to piston rings, but rather other sliding members. It is clear that a coating is on the projection 10 (another sliding member), in Figure 2, and on a cylindrical tubular body 13 (yet another sliding member), in Figure 3. Just because the cylindrical tubular body 13 is on the pitching test, it does not mean that the component 13 is not a tubular body. In fact, claim 1, line 2 sets forth a tubular body, which reads upon the claimed subject matter. Further, it is clear that the cylindrical tubular body 13 is not principally a piston ring as shown in Figure 4. Therefore the specification is not limited to just a piston ring. Elements 10 and 13 are other sliding members

In respect to Lemelson, applicants have argued that synthetic diamond coating is distinct from a Cr-N coating. In response, it is noted that the features upon which applicant relies (i.e., "chromium-nitride coating") are not recited in the rejected claims 8

and 15. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

In respect to Hamada et al., applicants have argued that the reference broadly defines sliding members to include a piston pin; that Hamada et al. talk of coating cam lobes and lifters with chromium nitride and that this is not extended to coating piston pins; and that the rejection relies on Figure 1 of Hamada et al. and that Figure 1 is not a piston pin. In response to the first argument, the argument is not commensurate with the scope of the claims. Hamada et al. still teach a piston pin 30 in Figure 2B irrespective of the lobes and the lifters. It is clear that reference character 30 defines a piston pin 30 which the examiner relies on the rejection. Applicants should note that the examiner relies on component 30 in Figure 2B to make the rejection and not component 10 as shown in Figure 1A, 1B. Further, it is clear that the examiner made a typographical error in labeling the figure since there is no Figure 1 in Hamada et al. However, when reading the rejection, the rejection relies on the piston pin 30. Further, claim 1 does not require that the coating be a chromium-nitride coating, but rather a coated cylindrical exterior margin without specifying the material of the coating.

Applicants' arguments with respect to claims 9-12 and 16-19 have been considered but are moot in view of the new ground(s) of rejection.

the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

In respect to Hamada et al., applicants have argued that the reference broadly defines sliding members to include a piston pin; that Hamada et al. talk of coating cam lobes and lifters with chromium nitride and that this is not extended to coating piston pins; and that the rejection relies on Figure 1 of Hamada et al. and that Figure 1 is not a piston pin. In response to the first argument, the argument is not commensurate with the scope of the claims. Hamada et al. still teach a piston pin 30 in Figure 2B irrespective of the lobes and the lifters. It is clear that reference character 30 defines a piston pin 30 which the examiner relies on the rejection. Applicants should note that the examiner relies on component 30 in Figure 2B to make the rejection and not component 10 as shown in Figure 1A, 1B. Further, it is clear that the examiner made a typographical error in labeling the figure since there is no Figure 1 in Hamada et al. However, when reading the rejection, the rejection relies on the piston pin 30. Further, claim 1 does not require that the coating be a chromium-nitride coating, but rather a coated cylindrical exterior margin without specifying the material of the coating.

Applicants' arguments with respect to claims 9-12 and 16-19 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicants' amendment necessitated the new ground(s) of rejection presented in this Office action. The new limitations "coated cylindrical exterior margin" in claim 8, line 2, "the piston pin coating being a chromium-nitride coating" in claim 9, lines 1-2, "coating the cylindrical exterior margin with a selected material" in claim 15, line 6, and "on the cylindrical exterior margin of the tubular body" in claim 16, line 2, necessitated the new grounds of rejection. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ernesto Garcia whose telephone number is 571-272-

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7083. The examiner can normally be reached from 9:30-5:30. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel P. Stodola can be reached at 571-272-7087.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

E.G.

E.G.

December 21, 2005

A handwritten signature in black ink that reads "Daniel P. Stodola". The signature is written in a cursive style with a large, looped initial "D".

DANIEL P. STODOLA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3600